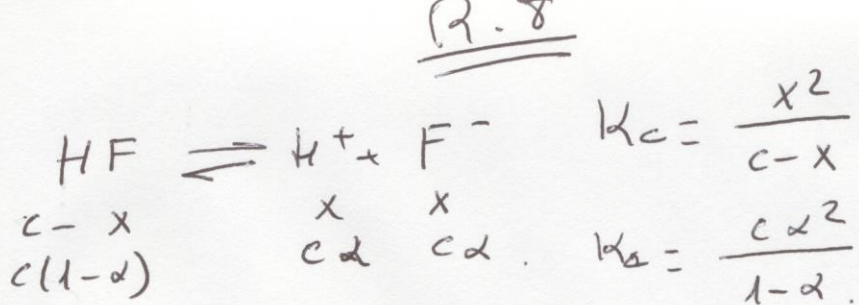


(10) $c = 2.22 \text{ M}$;
 $K_a = 7.2 \cdot 10^{-4}$.



$$7.2 \cdot 10^{-4} = \frac{x^2}{2.22 - x}; \quad x = 0.03996 \Rightarrow [\text{H}^+] = 0.03996 \text{ M}$$

$$[\text{H}^+] \cdot [\text{OH}^-] = 10^{-14} \rightarrow [\text{OH}^-] = \frac{10^{-14}}{0.03996} = 1.18 \cdot 10^{-13}$$

$$c \cdot \alpha = [\text{H}^+]; \quad 2.22 \cdot \alpha = 0.03996; \quad \alpha = 0.018 \Rightarrow 1.8\%$$

(11)

a)

A
$\text{pH} = 3$
$[\text{H}^+] = 10^{-3}$
$V = 0.1 \text{ L}$

+

B
$\text{pH} = 5$
$[\text{H}^+] = 10^{-5}$
$V = 0.1 \text{ L}$

\Rightarrow

$V = 0.2 \text{ L}$

\Rightarrow

$$[\text{H}^+] = \frac{10^{-3} \cdot 0.1 + 10^{-5} \cdot 0.1}{0.2}$$

$$= \frac{10^{-4} + 10^{-6}}{0.2} = 5.05 \cdot 10^{-4}$$

$$\text{pH} = -\log 5.05 \cdot 10^{-4} = 3.3$$

b) Si, on maintient la même proportion de $[\text{H}^+]$.

(12)

$$\text{HA} \rightleftharpoons \text{H}^+ + \text{A}^-$$

a)

$$\frac{c-x}{c-x} \quad \frac{x}{x} \quad \frac{x}{x} \quad K_a = \frac{x^2}{c-x}; \quad K_a = \frac{0.0035^2}{0.1 - 0.0035} = 1.27 \cdot 10^{-4}$$

$$[\text{H}^+] = 0.0035 \text{ M}; \quad c = 0.1 \text{ M}$$

b) $\text{pH} = 2 \Rightarrow [\text{H}^+] = 10^{-2} \Rightarrow x = 10^{-2}$

$$K_a = 1.27 \cdot 10^{-4}; \quad 1.27 \cdot 10^{-4} = \frac{(10^{-2})^2}{c - 10^{-2}}; \quad c = 0.798 \text{ M}$$

(13)

$$\alpha = 0.026$$

$$c = 0.2 \text{ M}$$

$$\text{HA} \rightleftharpoons \text{H}^+ + \text{A}^-$$

$$\frac{c}{c(1-\alpha)} \quad \frac{x}{c\alpha} \quad \frac{x}{c\alpha} \quad K_a = \frac{c\alpha^2}{1-\alpha}$$

$$K_a = \frac{0.2 \cdot (0.026)^2}{1 - 0.026} = 1.39 \cdot 10^{-4}$$

(14)

